

1906 THREE-ELECTRODE TUBE

L de Forest (USA)

While Fleming was developing his two-electrode valve, Dr Lee de Forest was working in the United States on somewhat similar lines, and on 25 October 1906, de Forest applied for a patent for a three-electrode valve—a triode—as a device for amplifying feeble electric currents, the amplification being achieved by using a voltage on the intermediate electrode (grid) to control the plate current. A few months later de Forest extended the patent to cover the use of the valve as a detector. The introduction of the third electrode to provide an amplifier as compared with the two-electrode rectifier very greatly extended the potential applications of the thermionic valve, and much credit is due to de Forest for his achievement.

Unfortunately, the invention of the triode led to considerable bitterness and litigation involving Fleming and de Forest, the former insisting to the end of his long life that de Forest's work was dependent on his own two-electrode valve. On the other hand, de Forest has always maintained that he was not aware of Fleming's patent before taking out his own. Initially the American courts held that de Forest's addition of the grid was dependent on Fleming's work. The story of the patent litigation did not end until 1943, when the United States Supreme Court decided that the original Fleming patent had always been invalid.

SOURCE: 'Fleming and de Forest—an appreciation' by Captain C F Booth *IEE Pub. Thermionic Valves 1904–1954* (London: IEE) p 2 (1955)